ORIGINAL

Before the
Federal Communications Commission
Washington, D.C.

In the Matter of	)	
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	)	
	)	
Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them	)	CC Docket No. 92-235
	)	
	)	
	)	

COMMENTS OF BELL ATLANTIC PERSONAL COMMUNICATIONS, INC.

Bell Atlantic Personal Communications, Inc., on behalf of the Bell Atlantic Companies[1], submits these comments in support of the Commission's efforts to promote more efficient use of the frequency bands below 512 MHz allocated to the private land mobile radio (PLMR)

A. Narrowband Channel Plan

The FCC has proposed to reduce channel spacing for private radio systems operating in the 72-512 MHz bands to 5 or 6.25 kHz.[2] Currently, there is no equipment available that employs 5 or 6.25 kHz channelization for operation in these bands, and little, if any, research or development work has been done. In fact, systems utilizing 12.5 kHz channels are only now becoming available. Consequently, Bell Atlantic recommends that the FCC amend its proposal to specify only a migration to 12.5 kHz channels. When the feasibility of 5 and 6.25 kHz channels becomes more certain, the FCC may wish to consider further reductions in bandwidth in a follow-up proceeding.

B. Transition Period

The FCC has proposed a transition period for existing licensees to migrate to the narrowband technology.[3] This migration would be accomplished in two stages, with initial reductions to 12.5 or 15 kHz required by January 1, 1996.

In presenting this proposal, the FCC has assumed that conversion to narrowband will require only slight modifications to existing equipment. However, none of Bell Atlantic's present equipment can be retrofitted to the new narrowband technology. Replacing all base stations and mobiles would cost Bell Atlantic over $21 million (see Appendix A).

Considering the cost of narrowband conversion, the FCC's proposal does not afford an adequate transition period for existing licensees. Consequently, the FCC should adopt a

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[2] NPRM at 13, Appendix A.

[3] NPRM at 13, Appendix A.

graduated schedule similar to the one proposed for 5 and 6.25 kHz channelization, i.e. extending from 2004 through 2012.[4]

C. Frequency Stability

The FCC has proposed technical guidelines for frequency stability which would require systems in the 150-220 and 420-512 MHz bands to operate with a stability of 0.1 parts per million (ppm).[5] Since there is no mention of a transition period for this technical requirement, it is assumed that all existing systems must meet these guidelines immediately upon the effective date of the FCC order. As none of Bell Atlantic's existing equipment would meet these stringent guidelines, it would have to replace this equipment immediately without the benefit of any transition period.

Since the requirement to immediately conform to the frequency stability guideline is inconsistent with the proposed transition plan for narrowband conversion, Bell Atlantic assumes that this was an oversight and recommends that the FCC's proposal be amended to include a period of transition.

D. Power and Antenna Height Limits

In the 150-174 MHz and 450-470 MHz bands, the FCC proposed a maximum authorized effective radiated power (ERP) of 300 watts for stations with heights above average terrain (HAAT) of up to 60 meters (197 feet).[6] Stations with higher HAATs would be required to operate using reduced power levels.

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[4] NPRM at 119, Appendix D, Section 88.433 (d).

[5] NPRM at 106, Appendix D, Section 88.425.

[6] NPRM at 23, Appendix A.

The FCC has indicated that its intent in proposing power/height limitations is to promote frequency reuse at distances of approximately 50 miles.[7] This objective is inconsistent with the needs of many private radio licensees. Bell Atlantic's TMRS systems, for example, are frequently designed to cover large areas. This extensive level of coverage is necessary for adequate maintenance of a telephone network that provides service to customers over a vast area, including most of six states and the District of Columbia. Consequently, systems using relatively high ERPs and HAATs are employed. If the FCC's proposal is adopted, the coverage of some private radio systems would be substantially reduced, and licensees would need to construct fill-in transmitters to rebuild the coverage areas. This would result in substantial additional costs to Bell Atlantic of more than $13 million (see Appendix B). Additional costs may be incurred as a result of difficulties in obtaining transmitter sites, and the potential need for simulcasted systems.

While users should not be licensed for more power than is necessary for satisfactory operation, the FCC's proposal should nonetheless accomodate the diverse needs of private radio users with regard to service area and operating requirements. Consequently, the FCC should abandon its proposal to adopt strict ERP/HAAT limitations. If the FCC believes that some standard is needed to ensure that applicants have properly matched their power requirements with their service area requirements, then it should require that applicants be required to submit coverage contours with their applications. These contours would demonstrate that applicants are using only the minimum power necessary to meet their individual needs.

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[7] NPRM at 23, Appendix A.

E. Conclusion

Bell Atlantic believes that the FCC's objective to improve the efficiency of spectrum used by private radio licensees is laudable. However, the specific proposals to incorporate narrowband technology and impose strict power/antenna height limitations, while they advance the objective of spectrum efficiency, do not recognize the impact on existing private radio users. These proposals, if adopted, would impose significant costs and burdens on existing licensees.

Bell Atlantic recommends that the FCC amend its narrowband proposal to specify only a migration to 12.5 kHz channels. Furthermore, the transition period for conversion to 12.5 kHz channels should be extended beyond the proposed date of January 1, 1996, to allow

APPENDIX A

COST OF MIGRATION TO NARROWBAND TECHNOLOGY

The FCC has proposed to reduce channel spacing for private radio systems operating in the 72-512 MHz bands to 5 or 6.25 kHz. An analysis of existing 150 and 450 MHz TMRS systems operated by Bell Atlantic has determined that all existing equipment would have to be replaced to accommodate this new channelization plan. Consequently, the cost of replacing all base stations and mobile units has been determined to assess the economic impact of the FCC's proposal on Bell Atlantic. Table A-1 provides a summary of the number of mobiles and base stations currently operated by each Bell Atlantic Operating Telephone Company. The cost of replacing this equipment has been estimated at $21,430,000.

Table A-1: Equipment Replacements for Narrowband Conversion

Operating Telephone Company	Equipment Quantities Requiring Replacement	
	Mobiles	**Base Stations**
C&P Telephone Company (D.C.)	450	7
C&P Telephone Co. of Maryland	300	4
C&P Telephone Co. of Virginia	1600	43
C&P Telephone Co. of West Virginia	200	18
Diamond State Telephone Co.	0	0
Bell Telephone Co. of Pennsylvania	1600	32
New Jersey Bell Telephone Company	1500	24
Bell Atlantic Totals	5650	128
Cost of Replacements (Note 1)	$ 16,950,000	$ 4,480,000
Total Cost of Replacements	$ 21,430,000	

Note 1: These costs represent installed costs of $3000 per mobile and $35,000 per base station, and are based on material estimates received from Motorola.

APPENDIX B

COST OF COMPLIANCE WITH PROPOSED ERP/HAAT LIMITATIONS

In the 150-174 MHz and 450-470 MHz bands, the FCC has proposed a maximum authorized effective radiated power (ERP) of 300 watts for stations with heights above average terrain (HAAT) of up to 60 meters (197 feet). Stations with higher HAATs would be required

Table B-2: TMRS Stations Not Compliant with Proposed ERP/HAAT Standard

Operating Telephone Company	Total TMRS Stations	Non-Compliant TMRS Stations
C&P Telephone Company (D.C.)	7	3
C&P Telephone Co. of Maryland	4	4
C&P Telephone Co. of Virginia	43	30
C&P Telephone Co. of West Virginia	18	9
Diamond State Telephone Co.	0	0
Bell Telephone Co. of Pennsylvania	32	29
New Jersey Bell Telephone Company	24	24
Bell Atlantic Totals	128	99

In order to assess the economic impact of the FCC's proposal on Bell Atlantic, some determination must be made as to how many fill-in transmitters would be required to maintain the current levels of coverage. A thorough study of all TMRS systems was not realizable due to the short time frame. However, a reasonable estimate of the required costs can be obtained by analyzing a typical system, and applying the ratio of "fill-in transmitters required to the number of existing base stations" to determine the total number of fill-in transmitters required.

As a model, a three station system operating in western Maryland by the C&P Telephone Company of Maryland will be analyzed. Table B-3 illustrates the ERP/HAAT specifications under which these stations operate.

Table B-3: Western Maryland TMRS System

Station Name	HAAT (feet)	ERP (watts)
Backbone Mt	666	457.1
Martin Mt	742	398.1
Garret Cty Airport	605	295.1

Based on the FCC proposal, C&P would be required to reduce the power of these three stations to 5 watts ERP. Consequently, the coverage contours of these three stations would be substantially reduced. Figures B-1 and B-2 represent coverage contours under normal operating conditions and with a reduction to 5 watts ERP, respectively. The yellow/green shaded areas represent satisfactory signal strengths, while the white areas represent areas where the signal is below the minimum. These coverage contours clearly illustrate that substantial areas of coverage are lost with the reduction in ERP. In order to maintain an adequate level of coverage for the TMRS system, seven additional fill-in transmitters would be required. This is illustrated by the coverage contour represented in Figure B-3.

The western Maryland TMRS system analysis indicates that a "fill-in transmitter to existing base station" ratio of 2.3 (i.e. $7 \div 3$) is required to maintain existing levels of coverage. While this ratio is appropriate for the western Maryland system, it may vary considerably for other systems, depending on their characteristics (e.g. type of terrain) and the required reductions in ERP. One would expect that systems with flatter terrain, or those with only minor reductions in ERP would not require as many fill-in transmitters. Conversely, systems with hilly terrain, or those requiring large reductions in ERP would result in higher ratios. Since the majority of Bell Atlantic's "non-compliant" base stations would require substantial reductions in ERP, and since the western Maryland system is characterized by hilly terrain, we can conclude that the ratio of 2.3 is relatively conservative for Bell Atlantic.

In order to determine the total cost of fill-in transmitters required by the FCC ERP/HAAT proposal, we have applied the ratio of 2.3 to the total number of non-compliant base stations, i.e. 99. Consequently, adoption of the FCC proposal would result in the construction of approximately 228 new base stations to fill-in coverage lost by the corresponding reduction in ERP. These 228 base stations would cost Bell Atlantic Companies approximately $ 7,980,000 (based on installed costs of $35,000 per base station). These costs do not include the cost of purchasing new transmitter sites, building towers, or constructing simulcasted systems. These additional costs may be required in many cases. A conservative estimate for these additional costs would range from $5 to $10 million. Consequently, the total cost to Bell Atlantic of the proposed ERP/HAAT limitations would be $13 to $19 million.

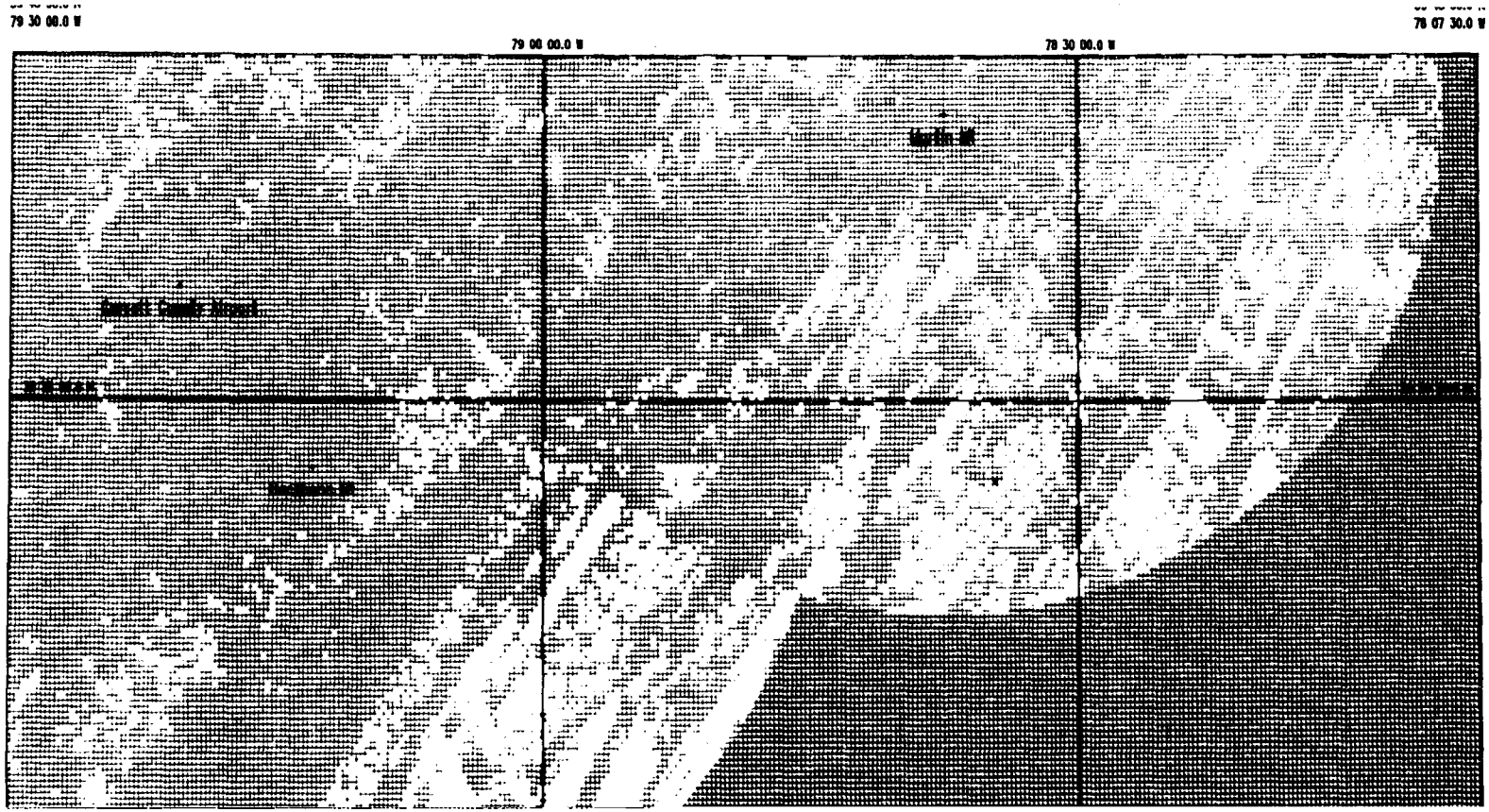
:ing 450 MHz TMRS coverage
arn Maryland Operations Area
: R L Hefer

Largest Signal (N-1):
.6 to -143.0 dBW
w Minimum
Analyzed

FIGURE B-1

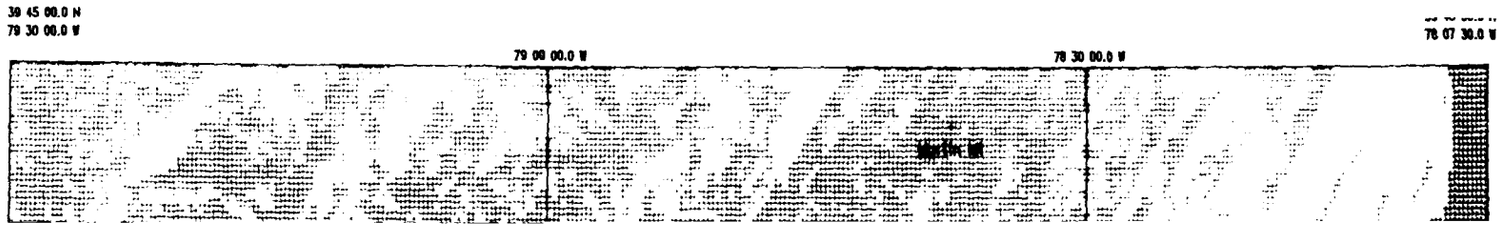
File:name angle	H:V	Centerline	Grp	Latitude Longitude
H:V Manufacturer		Model		
FQ01:Backbone Mt			Al	39 27 04.0 N
Watts 0:0.0	92.0	feet		79 13 54.0 W
1545 unspecified		omnidirectional		
FQ01:Martin Mt			Al	39 42 28.0 N
Watts 0:0.0	135.0	feet		79 07 29.0 W
1545 unspecified		omnidirectional		
FQ01:Garrett County Airpo			Al	39 34 55.0 N
Watts 0:0.0	110.0	feet		79 08 29.0 W
1545 unspecified		omnidirectional		

nce : 90.00 %



Existing 450 MHz TMRS coverage
ERP reduced to 5 watts
Western Maryland Operations Area
ENGR: R L Hefer

Nth Largest Signal (N=1):
6.9 to -143.0 dBW
Below Minimum
Not Analyzed



roposed 450 MHz coverage
RP 5 watts, added new sites
estern Maryland Operations Area
NGR: R L Hefer

th Largest Signal (N=1):
6.9 to -143.0 dBW
elow Minimum